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United States Patent

[19] **Janecke**

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[54] **ADAPTIVE AUTOMATED TRANSMISSION
 DOWNSHIFT CONTROL.**

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[*] **Notice:** This patent is subject to a terminal disclaimer.

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Related U.S. Application Data

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[51] **Int. Cl.⁷** F16H 61/04; F16H 59/00; B60K 41/02

[52] **U.S. Cl.** 477/148; 477/78; 74/335

[58] **Field of Search** 74/335, 336 R; 477/144, 148, 154, 78, 120; 701/51, 52, 55, 56

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[57] ABSTRACT

A method/system for controlling downshifting in an automated mechanical transmission system (10) utilized on a vehicle. When a downshift from a currently engaged ratio (GR) is required ($ES < ES_{D/S}$), skip downshifts ($GR_{TARGET} = GR - N, N > 1$) and then single downshifts ($GR_{TARGET} = GR - 1$) are evaluated in sequence. If throttle demand is high ($THL > REF$), skip downshifts are evaluated to determine if they can be completed at no greater than a reference value ($ES_{DES} = ES_{DES-DEFAULT} + offset$), which is higher than otherwise ($ES = ES_{DES-DEFAULT}$) allowed.

10 Claims, 4 Drawing Sheets

